

REMARKS

Status of the Claims

Claims 5, 6, 10-18, and 20-30 are pending, with Claims 5, 13, 18, 22, 27, 28, 29 and 30 as being independent. Claims 5, 13, 18, 22, 27-30 have been amended.

Requested Action

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejection in view of the foregoing amendments and the following remarks.

Applicants also respectfully request that this amendment be entered inasmuch as it is being filed with an RCE.

Telephone Interview Summary

Applicants gratefully acknowledge the courtesies extended by the Examiner during the telephone interview of October 22, 2007. In the interview, the undersigned discussed the claim amendments presented in the August 7, 2006 Amendment that resulted in the issuance of the October 5, 2006 Notice of Allowance. The Examiner agreed that amending the claims to adopt the same language as the claims in the August 7, 2006 Amendment would likely overcome the outstanding rejection, since the outstanding rejection is based on the same art applied in the April 5, 2006 Office Action to which the August 7, 2006 Amendment responded.

The undersigned also discussed amending the independent claims to recite one of the same concepts as that added in the August 7, 2006 Amendment, but in different way. More

specifically, in the interview, Applicants proposed amending the independent claims to recite the shifting of a voltage below which the first electron-emitting member is to be operated from the first voltage level to the second voltage level, as has been done in this Amendment. The Examiner indicated that he would carefully consider an amendment adding this feature and possibly withdraw the outstanding rejection.

This feature, added to the independent claims in this Amendment, relates to the same concept recited in the claims in the August 7, 2006 Amendment that rendered the case allowable, as will now be explained.

The August 7, 2006 Amendment to Claim 5 recites in part, “shifting the F-N plot of the electron-emitting characteristic of the first electron-emitting member so as to increase the voltage above which the absolute value of the inclination in the F-N plot of the electron-emitting characteristic of the first electron-emitting member decreases and below which the first electron-emitting member is to be operated”. One non-limiting example of such shifting is shown in Figure 12, where the F-N plot is shifted from the curve on the right to the curve on the left, which has a higher bending point (at P2) than the curve on the right. At the bending point, the absolute value of the inclination in the F-N plot decreases. When voltage is applied above the bending point, electron emission can deteriorate. And when the F-N plot of the rightmost curve shifts to become the curve on the left, having a higher bending point, the voltage above which the absolute value of the inclination in the F-N plot decreases is increased, thereby increasing the maximum voltage at which stable electron emission occurs. As a result, shifting the F-N plot to increase the voltage above which the inclination decreases, permits higher voltages to be applied to the member

without a deterioration in its emission characteristics. Therefore, this F-N plot shift also increases to voltage below which the member is to be operated. This concept is captured by the language in the August 7, 2006 amendment to Claim 5: “shifting the F-N plot. . . so as to increase the voltage. . . . below which the first electron-emitting member is to be operated”.

The present amendment relates to the same concept, since it recites, for example in paragraph (C) of Claim 5 “shifting a point where an inclination in an F-N plot of an electron-emitting characteristic of the first electron-emitting member changes. . . . so as to shift a voltage below which the first electron-emitting member is to be operated”.

Moreover, neither the patent to Dean et al., nor the patent to Kitamura et al. are understood to disclose or suggest this concept. Accordingly, Applicants submit that the present amendment to the independent claims renders the claims allowable over this art.

Rejection

Claims 5, 6, 10-18, and 20-30 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kitamura (U.S. Patent Application Publication No. 2002/0031972) or Dean (U.S. Patent No. 6,645,028).

In response, while not conceding the propriety of the rejection, independent Claims 5, 13, 18, 22, 27, 28, 29 and 30 have been amended. Applicants submit that as amended, these claims are allowable just as the claims in August 6, 2006 Amendment are allowable, as discussed above.

More specifically, paragraph (c) of Claim 5, for example, has been amended to recite the step of shifting a point where an inclination in an F-N plot of an electron-emitting characteristic of the first electron-emitting member changes from a point corresponding to the first voltage level to a point corresponding to the second voltage level so as to shift a voltage below which the first electron-emitting member is to be operated from the first voltage level to the second voltage level. In contrast, the citations to Kitamura et al. and Dean et al. are not understood to disclose or suggest any such change in the operating range of their electron emitting members as a result of shifting a point where an inclination in an F-N plot of an electron-emitting characteristic of the first electron-emitting member changes, as recited by amended Claim 5. For these reasons, amended Claim 5 is allowable over this art, and therefore, Applicants respectfully request that the rejection of Claim 5 be withdrawn. And because independent Claims 13, 18, 22, 27, 28, 29 and 30 have been amended in a similar manner, they are submitted to be allowable for similar reasons. Therefore, Applicants respectfully request that the rejection of these claims also be withdrawn.

Conclusion

In view of the above amendments and remarks, the application is in allowable form. Therefore, early passage to issue is respectfully solicited.

Any fee required in connection with this paper should be charged to Deposit Account No. 06-1205.

Applicants' undersigned attorney may be reached in our Washington D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address given below.

Respectfully submitted,

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